

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Learning Goal 2.3**

I can apply order of operations to fractions.

Confirm all the answers to the following questions by showing one operation per line of work.

$$\begin{aligned}
 \text{a. } \frac{1}{2} \times \left( \frac{8}{9} - \frac{5}{9} + \frac{1}{4} \right) &= \frac{7}{24} \\
 \frac{1}{2} \times \left( \frac{3}{9} + \frac{1}{4} \right) &= \frac{7}{24} \\
 \frac{1}{2} \times \left( \frac{1}{3} + \frac{1}{4} \right) &= \frac{7}{24} \\
 \frac{1}{2} \times \left( \frac{4}{12} + \frac{3}{12} \right) &= \frac{7}{24} \\
 \frac{1}{2} \times \frac{7}{12} &= \frac{7}{24} \\
 \frac{7}{24} &= \frac{7}{24}
 \end{aligned}$$

$$\begin{aligned}
 \text{b. } \left( \frac{8}{9} - \frac{1}{2} \right) \div \frac{5}{6} + \frac{3}{4} &= \frac{73}{60} \\
 \left( \frac{16}{18} - \frac{9}{18} \right) \div \frac{5}{6} + \frac{3}{4} &= \frac{73}{60} \\
 \frac{7}{18} \div \frac{5}{6} + \frac{3}{4} &= \frac{73}{60} \\
 \frac{7}{18} \times \frac{6}{5} + \frac{3}{4} &= \frac{73}{60} \\
 \frac{7}{18} \times \frac{6}{5} + \frac{3}{4} &= \frac{73}{60} \\
 \frac{7}{15} + \frac{3}{4} &= \frac{73}{60} \\
 \frac{28}{60} + \frac{45}{60} &= \frac{73}{60} \\
 \frac{73}{60} &= \frac{73}{60}
 \end{aligned}$$

$$\begin{aligned}
 \text{c. } \frac{1}{5} \div \frac{8}{9} \times \left( \frac{5}{9} - \frac{1}{2} \right) &= \frac{1}{80} \\
 \frac{1}{5} \div \frac{8}{9} \times \left( \frac{10}{18} - \frac{9}{18} \right) &= \frac{1}{80} \\
 \frac{1}{5} \div \frac{8}{9} \times \frac{1}{18} &= \frac{1}{80} \\
 \frac{1}{5} \times \frac{9}{8} \times \frac{1}{18} &= \frac{1}{80} \\
 \frac{9}{40} \times \frac{1}{18} &= \frac{1}{80} \\
 \frac{1}{80} &= \frac{1}{80}
 \end{aligned}$$

$$\begin{aligned}
 \text{d. } \frac{1}{4} \div \left( \frac{1}{8} + \frac{7}{8} \times \frac{2}{5} \right) &= \frac{10}{19} \\
 \frac{1}{4} \div \left( \frac{1}{8} + \frac{7}{20} \right) &= \frac{10}{19} \\
 \frac{1}{4} \div \left( \frac{5}{40} + \frac{14}{40} \right) &= \frac{10}{19} \\
 \frac{1}{4} \div \left( \frac{19}{40} \right) &= \frac{10}{19} \\
 \frac{1}{4} \times \left( \frac{40}{19} \right) &= \frac{10}{19} \\
 \frac{10}{19} &= \frac{10}{19}
 \end{aligned}$$

$$\begin{aligned}
 \text{e. } \frac{4}{9} \times \left( \frac{4}{5} \div \frac{3}{4} - \frac{7}{9} + \frac{3}{5} \right) &= \frac{32}{81} \\
 \frac{4}{9} \times \left( \frac{4}{5} \times \frac{4}{3} - \frac{7}{9} + \frac{3}{5} \right) &= \frac{32}{81} \\
 \frac{4}{9} \times \left( \frac{16}{15} - \frac{7}{9} + \frac{3}{5} \right) &= \frac{32}{81} \\
 \frac{4}{9} \times \left( \frac{48}{45} - \frac{35}{45} + \frac{3}{5} \right) &= \frac{32}{81} \\
 \frac{4}{9} \times \left( \frac{13}{45} + \frac{3}{5} \right) &= \frac{32}{81} \\
 \frac{4}{9} \times \left( \frac{13}{45} + \frac{27}{45} \right) &= \frac{32}{81} \\
 \frac{4}{9} \times \frac{40}{45} &= \frac{32}{81} \\
 \frac{4}{9} \times \frac{8}{9} &= \frac{32}{81} \\
 \frac{32}{81} &= \frac{32}{81}
 \end{aligned}$$

$$\begin{aligned}
 \text{g. } \left( -\frac{5}{9} \right)^2 + \left( -\frac{1}{9} \right) \times \left( -\frac{7}{9} \right) &= \frac{32}{81} \\
 \frac{25}{81} + \left( -\frac{1}{9} \right) \times \left( -\frac{7}{9} \right) &= \frac{32}{81} \\
 \frac{25}{81} + \frac{7}{81} &= \frac{32}{81} \\
 \frac{32}{81} &= \frac{32}{81}
 \end{aligned}$$

$$\begin{aligned}
 \text{f. } \left( \frac{3}{4} \times \left( \frac{2}{3} - \frac{2}{5} \right) \right) \div \frac{1}{8} + \frac{7}{8} &= \frac{99}{40} \\
 \left( \frac{3}{4} \times \left( \frac{10}{15} - \frac{6}{15} \right) \right) \div \frac{1}{8} + \frac{7}{8} &= \frac{99}{40} \\
 \left( \frac{3}{4} \times \frac{4}{15} \right) \div \frac{1}{8} + \frac{7}{8} &= \frac{99}{40} \\
 \left( \frac{3}{1} \times \frac{1}{15} \right) \div \frac{1}{8} + \frac{7}{8} &= \frac{99}{40} \\
 \left( \frac{1}{1} \times \frac{1}{5} \right) \div \frac{1}{8} + \frac{7}{8} &= \frac{99}{40} \\
 \frac{1}{5} \div \frac{1}{8} + \frac{7}{8} &= \frac{99}{40} \\
 \frac{1}{5} \times \frac{8}{1} + \frac{7}{8} &= \frac{99}{40} \\
 \frac{8}{5} + \frac{7}{8} &= \frac{99}{40} \\
 \frac{64}{40} + \frac{35}{40} &= \frac{99}{40} \\
 \frac{99}{40} &= \frac{99}{40}
 \end{aligned}$$

$$\begin{aligned}
 \text{h. } \frac{1}{3} \times \left( -\frac{5}{9} \right) + \left( \frac{4}{9} \right)^2 &= \frac{1}{81} \\
 \frac{1}{3} \times \left( -\frac{5}{9} \right) + \frac{16}{81} &= \frac{1}{81} \\
 -\frac{5}{27} + \frac{16}{81} &= \frac{1}{81} \\
 -\frac{15}{81} + \frac{16}{81} &= \frac{1}{81} \\
 \frac{1}{81} &= \frac{1}{81}
 \end{aligned}$$

$$\begin{aligned}
 \text{i. } \left(\frac{2}{3}\right)^2 \times \left(\frac{5}{6} \div \frac{2}{5} - \frac{1}{4}\right) &= \frac{22}{27} \\
 \frac{4}{9} \times \left(\frac{5}{6} \div \frac{2}{5} - \frac{1}{4}\right) &= \frac{22}{27} \\
 \frac{4}{9} \times \left(\frac{5}{6} \times \frac{5}{2} - \frac{1}{4}\right) &= \frac{22}{27} \\
 \frac{4}{9} \times \left(\frac{25}{12} - \frac{1}{4}\right) &= \frac{22}{27} \\
 \frac{4}{9} \times \left(\frac{25}{12} - \frac{3}{12}\right) &= \frac{22}{27} \\
 \frac{4}{9} \times \frac{22}{12} &= \frac{22}{27} \\
 \frac{1}{9} \times \frac{22}{3} &= \frac{22}{27} \\
 \frac{22}{27} &= \frac{22}{27}
 \end{aligned}$$

$$\begin{aligned}
 \text{j. } \left(\left(-\frac{3}{5}\right) \times \left(\frac{1}{2}\right)^2\right) \div \left(\left(-\frac{1}{8}\right) + \frac{3}{5}\right) &= -\frac{6}{19} \\
 \left(\left(-\frac{3}{5}\right) \times \frac{1}{4}\right) \div \left(\left(-\frac{1}{8}\right) + \frac{3}{5}\right) &= -\frac{6}{19} \\
 -\frac{3}{20} \div \left(\left(-\frac{1}{8}\right) + \frac{3}{5}\right) &= -\frac{6}{19} \\
 -\frac{3}{20} \div \left(\left(-\frac{5}{40}\right) + \frac{24}{40}\right) &= -\frac{6}{19} \\
 -\frac{3}{20} \div \frac{19}{40} &= -\frac{6}{19} \\
 -\frac{3}{20} \times \frac{40}{19} &= -\frac{6}{19} \\
 -\frac{3}{1} \times \frac{2}{19} &= -\frac{6}{19} \\
 -\frac{6}{19} &= -\frac{6}{19}
 \end{aligned}$$

$$\begin{aligned}
 \text{k. } \left(\left(\frac{5}{6} - \frac{2}{9}\right) \times \frac{1}{3}\right) \div \left(\frac{2}{5} + \frac{1}{2} - \frac{4}{5}\right) \times \frac{3}{8} &= \frac{55}{72} \\
 \left(\left(\frac{15}{18} - \frac{4}{18}\right) \times \frac{1}{3}\right) \div \left(\frac{2}{5} + \frac{1}{2} - \frac{4}{5}\right) \times \frac{3}{8} &= \frac{55}{72} \\
 \left(\frac{11}{18} \times \frac{1}{3}\right) \div \left(\frac{2}{5} + \frac{1}{2} - \frac{4}{5}\right) \times \frac{3}{8} &= \frac{55}{72} \\
 \frac{11}{54} \div \left(\frac{2}{5} + \frac{1}{2} - \frac{4}{5}\right) \times \frac{3}{8} &= \frac{55}{72} \\
 \frac{11}{54} \div \left(\frac{4}{10} + \frac{5}{10} - \frac{4}{5}\right) \times \frac{3}{8} &= \frac{55}{72} \\
 \frac{11}{54} \div \left(\frac{9}{10} - \frac{4}{5}\right) \times \frac{3}{8} &= \frac{55}{72} \\
 \frac{11}{54} \div \left(\frac{9}{10} - \frac{8}{10}\right) \times \frac{3}{8} &= \frac{55}{72} \\
 \frac{11}{54} \div \frac{1}{10} \times \frac{3}{8} &= \frac{55}{72} \\
 \frac{11}{54} \times \frac{10}{1} \times \frac{3}{8} &= \frac{55}{72} \\
 \frac{11}{27} \times \frac{5}{1} \times \frac{3}{8} &= \frac{55}{72} \\
 \frac{55}{27} \times \frac{3}{8} &= \frac{55}{72} \\
 \frac{55}{9} \times \frac{1}{8} &= \frac{55}{72} \\
 \frac{55}{72} &= \frac{55}{72}
 \end{aligned}$$